

CLAIMS

1. A temperature-humidity exchanger comprising: a moisture permeable membrane which transmits moisture therethrough; a dry gas separator in which low-temperature dry gas is caused to flow; and a wet gas separator in which high-temperature wet gas is caused to flow, in which the moisture permeable membrane, the dry gas separator, the moisture permeable membrane, and the wet gas separator are repeatedly stacked in the stated order, wherein in the dry gas separator and the wet gas separator:

a plurality of channel grooves which are divided by half in the stacking direction, are open to a direction in which the channel grooves come into contact with the moisture permeable membrane, and are arrayed parallel to one another are provided;

an aggregate communication groove which is made to communicate with both end portions of the plurality of channel grooves, for aggregating gas caused to flow through the channel grooves to at least one is provided; and

a supply manifold and an exhaust manifold which are made to communicate with the aggregate communication groove and penetrate the separators in the stacking direction are provided; and

a flow of the dry gas caused to flow in the channel grooves of the dry gas separators and a flow of the wet gas caused to flow in the channel grooves of the wet gas separators are counterflows.

2. A temperature-humidity exchanger according to claim 1, wherein a rib of the channel grooves of the dry gas separator and a rib of the channel grooves of the wet gas separator are opposite to each other and sandwich the moisture permeable membrane therebetween.

3. A temperature-humidity exchanger according to claim 1, wherein in the dry separator;

the supply manifold of the dry gas and the exhaust manifold of the dry gas, and the supply manifold of the wet gas and the exhaust manifold of the wet gas, are respectively provided at positions point-symmetric to each other with respect to a center point of the dry gas separator or axisymmetric to each other with respect to a center line of one side of the dry gas separator; and

the wet gas separator is one in which the dry gas separator is turned inside out with respect to a center line of another side as a center axis.

4. A temperature-humidity exchanger according to claim 1, wherein; a dry gas inlet manifold and a wet gas outlet manifold are provided on a lowermost layer in the stacking direction and

a dry gas outlet manifold and a wet gas inlet manifold are provided on an uppermost layer in the stacking direction.

5. A temperature-humidity exchanger according to claim 1, comprising:

a plurality of temperature-humidity exchange stacked bodies in which the moisture permeable membrane, the dry gas separator, the moisture permeable membrane, and the wet gas separator are repeatedly stacked in the stated order,

wherein the temperature-humidity exchange stacked bodies are stacked so that the dry gas exhaust manifold and wet gas supply manifold of the temperature-humidity exchange stacked body on an upstream side with regard to the dry gas is made to communicate with the dry gas supply manifold and wet gas exhaust manifold of the temperature-humidity exchange stacked body on a downstream side with regard to the dry gas.